Simplify each.

1. $\sqrt{54}$ $3\sqrt{6}$

$9 \cdot 6$

2. $\sqrt{32}$ $4\sqrt{2}$

$16\ 2$

3. $\sqrt{128}$ $8\sqrt{2}$

$64 \cdot 2$

4. $\sqrt{147}$ $7\sqrt{3}$

$49\ 3$

Simplify each.

1. $\sqrt{48}$ $4\sqrt{3}$

$16\ 3$

2. $\sqrt{180}$ $6\sqrt{5}$

$36\ 5$

3. $\sqrt{153}$ $3\sqrt{17}$

$9\ 17$

4. $\sqrt{384}$ $8\sqrt{6}$

$64\ 6$

Estimate the value of each square root as being between two consecutive intergers. (NO CALCULATOR)

$\sqrt{13}$ 3 & 4

$\sqrt{56}$ 7, 8

$49\ \ 64$

$\sqrt{74}$ 8 & 9

$64 \rightarrow 81$

$\sqrt{41}$ 6 & 7

A technique to solve quadratic equations that can be used SOMETIMES is using Square Roots

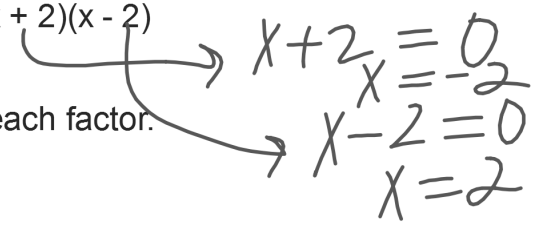
Ex: Solve using square roots by
1. get x^2 by itself
2. take the square root of both sides

Solve $3x^2 - 12 = 0$

Factor $0 = 3x^2 - 12$

$0 = 3(x^2 - 4)$

$0 = 3(x + 2)(x - 2)$



Find the zeros of each factor.

You can only solve a quadratic equation using SQUARE ROOTS if $b = 0$

there is no x term

Find all real solutions to each equation using square roots. Simplify irrational answers.

1. $3x^2 - 7 = 5$

2. $120 - 5x^2 + 9 - x^2 = 33$

3. $18x^2 + 13 = 111$

4. $2x^2 - 21 = 27$

5. $\frac{1}{3}x^2 - 9 = 7$

6. $(x + 3)^2 + 8 = 33$

Solve each quadratic equation using square roots.

1. $x^2 - 64 = 0$

2. $4x^2 - 25 = 0$

3. $18x^2 - 98 = 0$

Solving Quadratic equations using Square Roots:

- Isolate the term that is being square on one side of the equation
- Sqare root both sides of the equation
- Finish solving for x, if necessary.

The area of a circle is found using the following formula:

$$A = \pi r^2$$

The area of the circle is $480in^2$. Find the radius to the nearest hundredth of an inch.

Number	# of Real Square Roots
Pos	Two → ±
Zero	One → zero itself
Neg	None

Given the equation: $x^2 + b = 23$

a. For what values of b will there be 2 real solutions?

$b < 23$

b. For what values of b will there be only 1 real solution?

$b = 23$

c. For what values of b will there be only no real solution?

$b > 23$

Find the EXACT solutions to this equation:

$2x^2 - 21 = 87$

$2x^2 = 108$

$x^2 = 54$

$x = \sqrt{54} = \sqrt{9 \cdot 6} = \pm 3\sqrt{6}$

Find the EXACT solutions to this equation:

$16x^2 - 20 = 61$

$16x^2 = 81$

$x^2 = \frac{9}{4} = \pm\frac{3}{2}$

Find the EXACT solutions to this equation:

$\frac{2}{3}x^2 - 9 = 7$

$+9 \quad +9$

$\frac{3}{2} \cdot \frac{2}{3}x^2 = 16 \cdot \frac{3}{2}$

$\sqrt{x^2} = \sqrt{24} \qquad x = \sqrt{64} \qquad x = \pm 2\sqrt{6}$

Find the EXACT solutions to this equation:

$$\frac{3x^2 - 6}{7} + 2 = 11$$

$$\frac{3x^2-6}{7} = 9$$

$$3x^2 - 6 = 63$$

$$3x^2 = 69$$

$$x^2 = 23$$

$$x = \pm\sqrt{23}$$

You can now finish Hwk #27

Sec 10-4

Pages 531-532

Problems 12-16, 20, 21, 23-25, 33-37